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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,699	12/17/2003	Peiying Zhu	71493-1220 /pw	5698
7380	7590	06/25/2007	EXAMINER	
SMART & BIGGAR P.O. BOX 2999, STATION D 900-55 METCALFE STREET OTTAWA, ON K1P5Y6 CANADA			NGUYEN, TU X	
		ART UNIT	PAPER NUMBER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/736,699	ZHU ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Tu X. Nguyen	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 12 May 2004.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 38-42 is/are allowed.
- 6) Claim(s) 1-6,9-11,25-29,32-34,36,37,43-45,48 and 49 is/are rejected.
- 7) Claim(s) 7-8,12-24,30-31,35,46-47 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 9-11, 25-29, 32-34, 36-37, 43-45 and 48-49, are rejected under 35 U.S.C. 102(b) as being anticipated by Atkinson (US Patent 5883884).

Regarding claim 1, Atkinson discloses a method comprising:

at a wireless relay (see fig.1, element 103);

during time slots of a first slot type, receiving communications on a first frequency band and transmitting communications on a second frequency band (see col.9 lines 27-30);

during time slots of a second slot type that do not overlap with said time slots of the first type, receiving communications on the second frequency band and transmitting communication on the first frequency band (see col.9 lines 36-40).

Regarding claim 2, Atkinson discloses during time slots of the first, slot type: said receiving comprises receiving communications from a transceiver of a first transceiver type on the first frequency band and said transmitting comprises transmitting communications to the transceiver of the first transceiver type on the second frequency band (see fig.9);

during time slots of the second slot type: said receiving comprises receiving communications from at least one transceiver of a second transceiver type on the second

frequency band and said transmitting comprises transmitting communications to at Least one transceiver of the second transceiver type on the first frequency band (see fig.9).

Regarding claim 3, Atkinson discloses at the wireless relay during time slots of a third slot type, transmitting substantially nothing (see col.9 lines 22-24, the repeater does not retransmit in a slot that the mobile terminal communicates directly with the base station).

Regarding claim 4, Atkinson discloses comprising operating in a defined sequence of time slots of the first, second and third slot types (see fig.9).

Regarding claim 5, Atkinson discloses wherein receiving communications on the first frequency band, transmitting communications on the second frequency band, receiving communications on the second frequency band and transmitting communications on the first frequency band are all done using a single transceiver chain (see col.8 lines 19-22).

Regarding claim 6, Atkinson discloses between a slot of said first slot type and a next slot of said second slot type, reconfiguring the single transceiver to behave like a transceiver of a first transceiver type (see col.8 lines 34-44);

between a slot of said second slot type and a next slot of said first slot type, reconfiguring the single transceiver to behave like a transceiver of a second transceiver type (see col.8 lines 34-44).

Regarding claims 9 and 28, Atkinson discloses wherein the transceiver of the first transceiver type is a user equipment and the transceiver of the second transceiver type is a base station transceiver (fig.1 elements 110, 125, 100).

Regarding claims 10 and 29, Atkinson discloses wherein the transceiver of the first transceiver type is a network access node, and the transceiver of the second transceiver type is a base station transceiver (see fig.1 elements 103, 100).

Regarding claim 11, Atkinson discloses during time slots of said first slot type, the transceiver of the first type communicating bi-directionally with the wireless relay; during time slots of said second slot type, at least one transceiver of the second type communicating bi-directionally with the wireless relay; during time slots of a third slot type, the transceiver of the first type communicating directly bi-directionally with at least one transceiver of the second type (see fig.9).

Regarding claim 25, Atkinson discloses a method comprising:  
at a wireless relay node (see fig.1, element 103):  
during time slots of a first slot type, receiving communications on a first frequency band from a transceiver of a first transceiver type (see col.9 lines 27-30);  
during time slots of a second slot type, transmitting communications on the first frequency band to the transceiver of the first transceiver type (see col.9 lines 36-40);  
during time slots of a third slot type, receiving communications on the first frequency band from at least one transceiver of a second transceiver type (see fig.9, element 911);  
during time slots of a fourth slot type, transmitting communications on the first frequency band to at least one transceiver of the second transceiver type (see fig.9, element 912).

Regarding claim 26, Atkinson discloses during slots of said first slot type, said second slot type, said third slot type and said fourth slot type, communicating directly from the transceiver of the first transceiver type and at least one transceiver of the second transceiver

type on a second frequency band, and communicating directly from at least one transceiver of the second transceiver type and the transceiver of the first transceiver type on a third frequency band (see fig.9).

Regarding claim 27, Atkinson discloses comprising operating in a defined sequence of time slots of the first, second, third and fourth slot type (see fig.9).

Regarding claims 32-34, Atkinson discloses a wireless relay adapted to implement a method according to claim 1 (see fig.1,9).

Regarding claims 36-37, Atkinson discloses a wireless relay adapted to implement a method according to claim 25 (see fig.1,9).

Regarding claim 43, Atkinson discloses a method comprising:  
at a wireless relay (see fig.1, element 103);  
configuring the relay to receive communications on a first frequency band and to transmit communications on a second frequency band (see col.9 lines 27-30); and  
configuring the relay to receive communications on the second frequency band and to transmit communications on the first frequency band (see col.9 lines 36-40).

Regarding claims 44-45, Atkinson discloses defining a first umbrella frequency band and a second umbrella frequency band; and communicating directly from a transceiver of a first transceiver type and at least one transceiver of a second transceiver type on the first umbrella frequency band, and communicating directly from at least one transceiver of the second transceiver type and the transceiver of the first transceiver type on the second umbrella frequency band (see fig.9, f1, f2, f3 corresponds umbrella frequency).

Regarding claims 48-49, Atkinson discloses a wireless relay adapted to implement a method according to claim 43 (see fig.1,9).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12, 30 and 46, are rejected under 35 U.S.C. 103(a) as being unpatentable over Atkinson (US Patent 5883884) in view of Trott (US Pub.2006/0250973).

Regarding claims 12, 30 and 46, Atkinson fails to disclose all communications are OFDM communications.

Trott discloses all communications are OFDM communications (see par.020 lines 26-28). Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Atkinson with the above teaching of Trott in order to provide signal protocol Orthogonal Frequency.

***Allowable Subject Matter***

Claims 38-42 are allowed.

Claims 7-8, 12-24, 31, 35 and 47, objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding dependent claim 7, the prior art fails to teach “ reconfiguring the single transceiver to behave like a transceiver of the first transceiver type comprises connecting a first and second frequency signal for up conversion and down conversion respectively; reconfiguring the single transceiver to behave like a transceiver of the second transceiver type comprises connecting the second and first frequency signal for up conversion and down conversion respectively”.

Regarding dependent claim 13, the prior art fails to teach “ defining a first umbrella frequency band and a second frequency umbrella band; during slots of both said first slot type and said second slot type, communicating directly from a transceiver of a first transceiver type and at least one transceiver of a second transceiver type on the first umbrella frequency band, and communicating directly from at least one transceiver of the second transceiver type and the transceiver of the first transceiver type on the second umbrella frequency band”.

Regarding dependent claim 31, the prior art fails to teach “ wherein the second frequency band is a first OFDM band, and the first and third frequency bands together comprise a second OFDM band”.

Regarding independent claim 38, the prior art fails to teach “ a first frequency filter and a second frequency filter alternatively switchable such that either the first frequency filter filters for the receive chain and the second frequency filter filters for the transmit chain, or the

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second frequency filter filters for the receive chain and the first frequency filter filters for the transmit chain", as cited in the claim.

Regarding dependent claim 47, the prior art fails to teach "the first umbrella band and the first frequency band together comprise a first OFDM band; and the second umbrella band and the second frequency band together comprise a second OFDM band".

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed Tu Nguyen whose telephone number is 571-272-7883.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban, can be reached at (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



June 12, 2007